

REMARKS

Reconsideration of the above referenced application in view of the enclosed argument is requested. Claims 1-33 remain in the application.

The stated objection to the oath and declaration has been noted. Per the telephone call between the Applicant's representative and the Examiner of December 18, 2003, it is understood that this objection will be withdrawn.

ARGUMENT

Claims 1-3, 6-9, 12-14, 17-20, and 23-33 are rejected under 35 USC 103(a) as being unpatentable over Wool (US Pat. No. 6,373,948) in view of Aras et al. (US Pat. No. 5,872,588)(hereinafter Aras).

A brief summary of the present system and its use of masks to obfuscate selected portions of content is provided to assist the Examiner in understanding the present invention.

An embodiment of the present invention is a system and method for providing content level filtering or masking of digital content that is broadcast, multicast, or otherwise distributed to receivers in a communications system. Instead of controlling the content only at the location of the broadcaster or at the receiver, the present invention provides the capability to control access to the content, and manipulate the content itself via a masking operation (that is, *the content itself is modified to obfuscate selected portions of the content*), at any point in the content distribution hierarchy or transmission chain. In one embodiment, the present invention provides enhanced customer choice to different versions of the content and content creator control over content deemed to be too objectionable or too sensitive to be broadcast without partial concealment or obfuscation.

Embodiments of the present invention specify the use of a mask to change the content prior to distribution to a receiver. The mask may be a distorted or opaque two dimensional (2D) region (for video content), or a replacement audio

segment (for audio content), or a distorted or opaque three dimensional (3D) volume (for 3D content), carried separately from the original content in digital multimedia broadcast, multicast, or point-to-point distribution systems. The present invention also specifies the co-transmission to a receiver of encrypted, masked content, which may be used to “undo” a masking or obfuscation operation previously performed anywhere upstream of the receiver in the distribution channel. The present invention provides for controlled, revocable access by an end-user to the content according to the policies of the content creator, owner or distributor. In one embodiment, this control mechanism may be used to protect selected audiences from being able to render objectionable content and to grant certain customers or distributors control over the level of masking or obfuscation performed on the content prior to rendering or further transmission. In another embodiment, the content may be masked to obfuscate sensitive data within the content. For example, private financial data or trade secret data may be masked for some audiences but not others.

One or more masks may be applied to digital content at any point in a content distribution hierarchy to partially or wholly obfuscate or conceal selected portions of the content. A mask provides a fine-granularity determination of what portion of the content should be obfuscated and what portion should be left “in the clear.” A mask comprises a digital representation of the region to be obfuscated in the final rendering process perceivable by the end-user. The mask may be created by the content creator or by a third party after the original content is created. For 2D images or video data, for example, the mask may comprise either a set of pixels which are to be obscured or a piecewise closed curve which bounds the obscured region. For video data, one of these masks may be supplied for each frame in a selected video sequence. In one embodiment, the region may be specified by a starting frame number, an ending frame number, a 2D mask region, and an origin of the mask region. For audio data, the mask may comprise a starting time, an ending time, and a replacement sample or sound. For 3D data, the mask may comprise the volume region to be obscured, and may be represented as a collection of volume elements or an enclosing volume primitive. A characteristic feature of the mask is

the region represented and the resulting fact that some underlying content is obfuscated so that a particular end-user cannot perceive it.

Turning now to the cited art and their application to claim 1, Wool describes a system for providing restricted access to packages of TV programs, typically in a cable TV system. In Wool, cryptographic techniques are used to control access by a viewer to only selected subsets of programs or programming packages (i.e., to allow access only to those programs/channels registered for or paid for by the viewer). The Examiner seeks to apply Wool as teaching the claimed limitation "applying the mask to the digital content to generate content after mask applied data." However, Wool uses a mask as a filter only as a technique for determining which specific TV programs are part of certain programming packages (See col. 10, lines 13-25 of Wool) in order to allow the viewer's receiving device to determine the appropriate decryption key, and thus gain access to the desired TV program. Wool's mask is applied by the receiver to the programming stream to determine if the receiver is authorized to display the entire TV program being received. Wool does not teach or suggest that masks can be applied to the content itself (i.e., the TV program) to modify portions of the content (as currently claimed and described in the Specification at page 7, lines 3-19). That is, Wool does not teach or suggest that a mask can be applied to frames of a TV program to obfuscate selected portions of those frames so a viewer cannot perceive the selected portions of the frames when the program is rendered for the viewer by a receiving device (e.g., a set top box or TV). Wool's use of a mask is entirely different than the claimed invention. Wool does not teach or suggest such obfuscation using masks as is currently claimed and described in the Specification.

Topic: mask analysis

The meaning of the recited term "content after mask applied" data is clearly defined in the Specification. See page 6, lines 16-20 ("Second, the content may be transmitted with a mask already applied to it to generate "content after mask applied" (CAMA) data. This modified content may have had objectionable or sensitive data or information masked so that the objectionable or sensitive data or information cannot be perceived by the end-user.") This term is specifically recited in the claimed limitation. It is fundamental that an Applicant can be his or her own

lexicographer. The CAMA data is selected content after it has been masked in such as way as to have certain portions obfuscated. This concept is clearly not taught or suggested by Wool, since masking in Wool merely refers to masking program identifiers in a topic hierarchy for identifying selected programs that have been purchased by the viewer as part of a cable TV marketing package. Thus, Wool does not teach or suggest the claimed limitation.

Further, it is clear that in Wool the program identifier masking is performed at the receiver. However, in the present invention, the masking of selected program content is performed upstream in the content distribution hierarchy by a distributor, not at the receiver. This is evident from the limitation in claim 1 wherein the content after mask applied data is sent to the receiver. Thus, the masking has already been performed prior to reception of content by the receiver. Wool does not teach or suggest this concept evident in the limitations of claim 1.

In addition, the claimed limitation "sending the content after mask applied data to the receiver for subsequent rendering of the content after mask applied data when the receiver is not trusted" is not taught or suggested in Wool. Wool only sends data that is usable to a viewer's receiving device that *is trusted* (i.e., is authenticated as being a device that is allowed to access the content due to the previous registration or paid subscription of the viewer). Wool does not modify the content (program) to obfuscate selected portions of the content to make those portions appear different to the viewer, when rendered, than the original content and then send that masked content to an untrusted receiver. Wool does not teach or suggest that the content is masked in this way (to generate "content after mask applied" data) so that when the content is rendered by the viewer's receiving device, objectionable content is obfuscated. Wool does not teach or suggest that masked content may be sent to a receiver that is *not trusted*, since Wool's receiver is determined to be trusted before any usable content is sent.

Since Wool is deficient in teaching or suggesting these claimed limitations, Wool does not teach or suggest claim 1.

Aras discloses an interactive TV program distribution system that allows a broadcaster to gather real-time information about the viewing behavior of

subscribers. Information is collected by coding audio-visual materials (AVM) sent to viewer's receiving devices, and then by reporting the codes of the materials actually watched by the viewer to a collection center for processing. In col. 10, lines 9-30, Aras briefly refers to a parental control feature whereby objectionable language may be muted, yet no details on how this may be accomplished are provided. In Aras, this activity is clearly performed at the viewer's receiving device. In this regard, Aras teaches nothing more than what is well known in the parental control circuitry of many television sets today (that of blocking display of TV programs having a certain rating). In contrast, in the present invention, and as is currently claimed in claim 1, the masking of selected portions of the content to obfuscate such portions is performed *prior to* sending the "content after mask applied" data to the receiver, when the receiver is not trusted. That is, the masking is applied by an entity other than the receiver. This is apparent from claim 1 since the application of the mask is done before the sending of the masked content to the receiver. Aras does not teach or suggest that an entity "upstream" in the content distribution system from the receiver applies the mask to the selected content as currently claimed (in the present invention, the masking can be done by any upstream entity in a hierarchical content distribution system). Claim 1 clearly recites steps taken by an entity other than the viewer's receiving device. Therefore, Aras does not teach or suggest the claimed limitation.

Furthermore, there is no determination of trust in a receiver in Aras. Claim 1 requires one action when the receiver is trusted and another action when the receiver is not trusted. The Examiner cites to col. 10, lines 21-24 of Aras ("when home station determines that AVM are to be screened") as teaching the determination of trust. However, the cited text teaches nothing about a distribution entity determining whether a viewer's receiving device is trusted. Aras merely mentions that the receiver determines whether to block display of the TV program or not based on a program rating. This has nothing to do with determining trust in the receiver itself by another entity, as is currently claimed.

One skilled in the art would not be motivated to combine the two cited references because the combination would not result in the claimed invention. The

combination does not teach or suggest masking of selected content and distribution of the masked content to downstream entities in a content distribution hierarchy as described in the present Specification and currently claimed.

In sum, for at least the foregoing reasons, neither Wool nor Aras, either alone or in combination, teach or suggest claim 1 because several limitations are not met by the cited art. Therefore, claim 1 is allowable as presented.

Similarly, independent claim 12 is also allowable.

Accordingly, the claims dependent from claims 1 and 12 (claims 2-5 and 13-16) are also allowable.

Further, with respect to claim 2, the cited text merely refers to obscuring material. The cited text does not teach that a mask comprises a replacement 2D region for a selected portion of one or more frames of video data. Hence Claim 2 is allowable.

Regarding independent claims 6 and 17, many of the claimed limitations are not taught or suggested by the cited references.

1) As discussed above for claim 1, the cited references do not teach or suggest a mask being used to obfuscate selected portions of the content.

2) Neither of the references teach or suggest determining if the transmission channel for distributing the content is trusted. The Examiner cites Aras at col. 10, lines 21-24 as disclosing this limitation, but the cited text merely mentions determining whether to screen the content. This is not the same as determining trust in the cryptographic sense. The cited text does not teach or suggest the limitation.

3) As discussed above for claim 1, the cited references do not teach or suggest applying a mask to the content itself to generate masked content wherein part of the content is obfuscated ("content after mask applied" data).

4) The limitation of encrypting the masked content is not taught or suggested. The cited text of Wool merely discloses that the TV program is transmitted as encrypted data to the receiver. In Wool's system, the mask is used to determine access to TV programs by the receiver. That is, the receiver applies the mask to the received data to determine if the receiver is eligible to display the

data based on the viewer's subscription. If the viewer is eligible, then the receiver decrypts the encrypted program. In Wool, the *encrypted program* is not masked at all. In the present invention, a distribution entity upstream from the receiver applies the mask to the content (e.g., the TV program) to produce "content after mask applied" data. This masked data is then encrypted and sent to the receiver. These concepts are very different from each other.

5) The limitation of reversing the masking is not taught or suggested. Wool merely teaches decrypting the encrypted program data and displaying it by the receiver. Wool does not teach or suggest that masked content that has been distributed (as discussed above and in the Specification) may be processed by the receiver to "reverse" the prior masking step performed by a distribution entity. That is, the receiver restores the original content (prior to the masking) when the receiver is trusted. This claimed limitation is very different than merely decrypted encrypted programs.

Since many of the limitations of claims 6 and 17 are not taught or suggested by the cited references, claim 6 is allowable as presented.

All claims dependent therefrom (claims 7-11 and 18-22, respectively) are also allowable.

With respect to independent claim 23, the combination of Wool and Aras does not teach or suggest the claimed invention. The Examiner is directed to blocks 206 and 212 of Figure 8 of the Specification for identification of the content censor and mask generator of the present invention. The cited text of Aras at col. 10, lines 18-20 ("Thus, objectionable language may be silenced when the video portion is presented.") is wholly deficient in teaching or suggesting the claimed limitations. Where does Aras disclose a content censor to identify *regions of content* to obfuscate? The Applicant contends this limitation is not found in Aras or Wool. A region is defined in lines 1-6 of page 12 of the Specification. The meager reference in Aras to silencing audio while displaying video is not the same as the claimed content censor to identify regions of content to obfuscate. Furthermore, neither Wool nor Aras teach or suggest a mask generator to accept the content and regions (as determined by the content censor) and produce a mask to apply to the content

to obfuscate the identified regions. As discussed at length above, Wool's mask is used to determine programming package subscriptions, not obfuscation of selected portions of content as currently claimed. The cited text of Aras does not teach or suggest that a mask can be applied to content to obfuscate identified regions as claimed. Since the claimed limitations are not taught or suggested claim 23 is allowable as presented.

Because independent claim 23 is allowable, all claims depending on claim 23 (claims 24-31) are also allowable. Nevertheless, the Applicant wishes to comment on some of the rejections of these claims.

As to claim 24, the cited text from Wool teaches nothing about the claimed limitation. Wool does not use a mask generator to link content with regions (since Wool teaches nothing about regions of content to be masked), generate a mask to be applied to the content to obfuscate selected portions of the content, nor apply the mask to the content. Thus, Claim 24 is allowable.

As to claim 26, Wool does not send content that has already been masked to the receiver. In Wool, the receiver does the masking of programming IDs to determine receiver eligibility for certain TV programs. Wool does not teach or suggest transmission of masked content. Claim 26 is allowable.

As to claim 27, Wool does not send content that has already been masked to the receiver. In Wool, the receiver does the masking of programming IDs to determine receiver eligibility. Wool does not teach or suggest transmission of masked content. Claim 27 is allowable.

As to claim 29, Wool does not teach or suggest that the masked content may be processed to reverse the masking and restore the obfuscated portions of the content to reproduce the original content. The cited text does not teach or suggest this limitation. Claim 29 is allowable.

As to claim 31, the claim requires that a content censor includes a region identification tool to identify a region of the digital content to obfuscate by applying the mask. Aras mentions that something in the receiver may obscure some part of the AVM. Aras does not teach or suggest that a region ID tool used by a content

creator or broadcaster identifies regions of content to obfuscate. Claim 31 is allowable.

With respect to independent claim 32, several limitations are not taught or suggested by the cited art. First, the cited art does not determine the security of the *transmission channel*. Wool teaches that the receiver may only display programs that the viewer is eligible to receive. But Wool does not determine the security of the transmission/distribution channel itself. Neither does Aras. This limitation is not taught or suggested by the combination of Wool and Aras. Second, the limitation of determining a mode of distribution is not disclosed. The cited text of Aras does not match the claimed limitation. Third, as discussed at length above, the masking and obfuscation of content is not taught by the references. Fourth, claim 32 requires that the determination of trust of the transmission channel affects what processing is then done. When the channel is trusted, a first mode of operation is undertaken (as described in Figure 6); when the channel is not trusted, a second mode of operation is undertaken (as described in Figure 7). This concept is specifically recited in claim 32, but is not taught or suggest in the cited art. The cited text merely refers to identifying audi-visual materials. It does not teach or suggest two modes of operation depending on whether it is known that the transmission channel is trusted or not as currently claimed (and as described in the Specification at page 8, line 31 to page 9, line 14).

For at least the above reasons, claim 32 is allowable.

Since claim 33 depends from allowable claim 32, it is also allowable.

Claims 4, 10, 15, and 21 are rejected under 35 USC 103(a) as being unpatentable over Wool in view of Aras, and further in view of Ritchey (US Pat. No. 5,495,576).

The Examiner cites Ritchey as teaching the claimed limitation. Ritchey appears to have no relevance to the claimed invention other than that it generally discloses 3D computer graphics. Ritchey does not teach or suggest that the content distributed by a content distribution entity is 3D volume data and that a mask may be applied to the 3D volume data to obfuscate a selected portion of the 3D volume by replacing the selected portion with other data. Furthermore, these claims are

dependent on allowable independent claims. Thus, claims 4, 10, 15 and 21 are allowable as presented.

Claims 5, 11, 16, and 22 are rejected under 35 USC 103(a) as being unpatentable over Wool in view of Aras, and further in view of Shoff et al. (US Pat. No. 6,240,555)(hereinafter Shoff).

These claims require that application of the mask results in replacement of part of the content with a replacement creative component. That is, the objectionable content portion is obfuscated by replacing it with another, unobjectionable content portion. However, in Shoff, the system includes additional supplemental content broadcast to a receiver that is displayed concurrently with the main TV program on the display. In essence, the supplemental content of Shoff is shown in one location of the display while the regular TV program is shown in the remainder of the screen (e.g., similar to a picture in picture (PIP) feature). This is very different than replacing a selected portion of the content of a frame of video with other content by applying a mask. Shoff does not teach or suggest using a mask to replace content portions. Furthermore, these claims are dependent on allowable independent claims. Therefore, claims 5, 11, 16, and 22 are allowable.

CONCLUSION

In view of the foregoing, Claims 1-33 are all in condition for allowance. If the Examiner has any questions, the Examiner is invited to contact the undersigned at (503) 264-8074. Early issuance of Notice of Allowance is respectfully requested.

Respectfully submitted,

Dated: _____

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